In the Matter of	)	
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Use of the 5.850-5.925 GHz Band	)	**ET Docket No. 19-138**
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	)	

COMMENTS OF SIBRTECH INC.

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Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C. 20554

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I.   INTRODUCTION

sibrtech inc. appreciates the opportunity to file these Reply Comments to the Federal

Communications Commission Notice of Proposed Rulemaking on the use of the 5.850-5.925

GHz Band. **sibrtech** develops AI-based edge computing transportation safety applications. This

field is ready for the transportation sector to take rapid advantage of the spectrum at issue for

V2X and transportation safety uses. The technology is affordable, has unprecedented

capabilities to provide real-time pedestrian and traffic analysis and safety information, and can

be rolled out with minimum infrastructure requirements. Now, more than ever, it is important

for the Commission to continue its well-planned long-term strategy for this spectrum to promote

safety of life and property in transportation. **sibrtech** urges the Commission to preserve the full

75 MHz mid-band spectrum of the 5.9 GHz band for V2X and transportation safety uses.

II.   ABOUT SIBRTECH

sibrtech is a small, year-old, Michigan-based tech startup developing next-generation infrastructure-based V2X applications. We apply and develop technology to tackle the rising rate of pedestrian traffic deaths in the United States and to improve cyclist and transportation safety. Our applications look at an area of road or intersection using a camera and a computer designed for artificial intelligence computations. Our technology detects people and vehicles at and near the road, computes in real-time each one's location, speed, and heading, and sends that information to oncoming vehicles. This will give oncoming vehicles advanced "sight" of people and vehicles at an intersection or road segment, even those that might be hidden from view of oncoming vehicles. With this information, the driver (whether human or computer) can safely plan their approach to the intersection or road segment. Our work is designed to promote the safety of both life and property using AI applications along with wireless communications.

III.   BACKGROUND

Pedestrian traffic fatalities in the United States continue to rise. In February of 2019, the Governor's Highway Safety Association reported that 2018 was the deadliest year for pedestrians since 1990.[1] Two months ago, the same Association issued its preliminary report for 2019. The news was not good—2019 was deadlier for pedestrians than 2018.[2] This rise in pedestrian traffic fatalities is a problem that can be solved. The Commission is a cornerstone to the solution.

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[1] https://www.ghsa.org/sites/default/files/2019-02/FINAL_Pedestrians19.pdf
[2] https://www.ghsa.org/sites/default/files/2020-02/GHSA-Pedestrian-Spotlight-FINAL-rev2.pdf

As a startup working in the V2X space, we look not only at the technical challenge of putting transportation safety applications to work, but also the challenges of developing a self-sustaining V2X technology and business. The two are related, and together make up a factor at the heart of the Commission's proposed action—the limited use to date of the spectrum at issue. There have been significant hurdles to using the designated bandwidth for V2X and transportation safety applications. These hurdles primarily exist now only in perception. As we discuss these further below, we keep two overriding factors in mind. First, the concept of "look-ahead" or giving a vehicle or driver advanced "sight" of hidden or unseen hazards and vulnerable road users is a key component of advancing road safety. This look-ahead feature is entirely dependent upon available wireless communications. Thus keeping sufficient reliable spectrum available for V2X and transportation safety applications is necessary for this key component to work. Second, with the recent boom in transportation and AI computing technology, V2X and transportation safety applications are poised for rapid growth and deployment. These two together mean that pedestrian and transportation safety are now, more than ever, a core component of the Commission's mission to exercise regulatory authority for the purpose of promoting safety of life and property.[3]

When the Commission worked with the National Highway Transportation Safety Administration to allocate spectrum for V2X and transportation safety, it advanced a long-term strategy to help save lives and protect property. That strategy paved the way for the exact set of circumstances that we have today—a convergence of affordable high-tech AI computing and advanced communications capabilities, and the knowledge to put them both to work. These circumstances now show why the strategy, though long-term and evolving, is sound. The

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[3] 47 U.S.C. 151

development of affordable components for AI-capable edge computing offers unprecedented opportunities to advance safety. And these opportunities are deployable. The implications of these developments merit consideration in this rulemaking.

First, the practical benefits of using the spectrum for V2X and transportation safety applications have grown. The capabilities of real-time edge computing—to provide affordable traffic safety systems with built-in AI computer modules, deployable at the road for real-time analysis of people and traffic flow—were not practical when the spectrum was allocated. They are now. And positions supporting the Commission's proposed action that do not take these capabilities and use cases into account simply are not based on a complete record.

Second, reliance on other nations as the appropriate yardstick for transportation safety use cases and spectrum allocation is in error. Yet supporters for the Commission's proposal cite them as leading examples.[4] Implicit within this line of reasoning is that those allocations are based upon the full potential to use the spectrum to save lives. But this is simply not the case. Transportation technology has experienced rapid growth in recent years, and much of that growth is led here. We urge the Commission to build a record that reflects the true capabilities of today's transportation safety solutions. We believe the results of this review will demonstrate the merit of continuing its strategy to lead in advancing transportation safety. It would be a great loss to mute the solutions that we and others are building because other countries have not yet put them into action.

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[4] *See, for example, Comments of NCTA—The Internet & Television Association,* at 21.

IV. FACTORS IMPACTING SPECTRUM UTILIZATION

<u>V2X and transportation safety application capabilities</u>. V2X is an important tool to save pedestrian lives and advance transportation safety. Infrastructure-based systems can provide "look-ahead" to see hazards and road users that may be hidden from an approaching car. V2X and transportation safety applications have demonstrated the ability to identify and make available to vehicles information on road users who might not be visible to the vehicle driver. It works for human drivers and automated driving systems. This analysis is done on a real-time basis and can identify vulnerable road users in at-risk situations, such as pedestrians entering traffic lanes from behind obstructions, away from crosswalks, and against traffic signals.

<u>Benefits now</u>. V2X and transportation safety applications are rapidly expanding. The benefits of sending safety information from infrastructure to vehicles starts with the first installation and the first vehicle capable of receiving information. Consider, for example, a high-risk intersection and a vehicle (human or computer-driven) that traverses that intersection every day. With an application providing "look-ahead" from the intersection to the vehicle, the vehicle's driver gains advanced knowledge of hidden hazards and vulnerable road users. If the driver is human, the knowledge is a smart alert. If the driver is a computer, the knowledge is detailed location and motion information about vehicles and people at the intersection who may be hidden from view of the computer driver. As repeatedly exemplified by pilot programs cited in comments on file,[5] V2X and transportation safety applications have been rolled out in pilot locations to demonstrate their benefits and incentivize further roll-out. And these rollouts are accelerating.

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[5] *See, for example, Comments of the Alliance for Automotive Innovation,* at 21-22, https://ecfsapi.Commission.gov/file/10310240313921/Final%205.9%20GHz%20Comments.pdf.

V2X structural hurdles. Applications like **sibrtech's** were once thought to require high bandwidth data connections to a road segment or intersection to support processing of the data at more powerful computers. That is no longer the case. **sibrtech** is among the companies demonstrating that edge computing—that is, applications on affordable AI computers installed at the road or intersection—can provide a new level of safety applications. We use technology building blocks that are commonly available to provide real-time analysis of the road and its users. This means that the minimum requirements for V2X transportation safety applications can be power, low bandwidth communications (to support security and maintenance), and the dedicated 75 MHz of the 5.9 GHz band.

V2X Affordability. Technology is at the point where V2X is feasible, affordable, and ready for its own boom in new applications. Smart infrastructure supporting V2X (and other smart infrastructure applications) can be built at a price that does not create a choice between V2X and traditional infrastructure such as roads and bridges. American companies today are selling inexpensive AI computers with immense capabilities. These machines are the heart of smart edge-computing applications that enable on-the-spot analysis of traffic and people flow. Additional components of infrastructure-based V2X safety systems, such as cameras (and potentially other sensors) and communications modules, are likewise inexpensive. What was once a special-budget technology showcase is now priced for integration into infrastructure.

V2X technology readiness. Much of transportation safety is built on long-term strategy. For example, the concept of automated emergency braking (AEB) for vehicles was demonstrated decades ago with radar based braking systems. But it took time for the technology to be ready for broad-based roll-out. Modern AEB systems, and their widespread roll-out, are possible because of advances in radar and vision-based systems in vehicles. Now all major automakers

offer AEB systems in their vehicles.[6] We see similar advances supporting V2X and

transportation safety applications that will use the transportation safety bandwidth. America has

led in the development of AI and the tools to use AI. One critical building block now readily

available is the affordable AI computer. These devices can perform tasks previously reserved for

their more powerful server or cloud computing cousins. They can be put into systems that

analyze vehicle and pedestrian traffic flow on-location and in real-time. Together with

affordable sensors and communications equipment, they provide at-hand the technology building

blocks for new and powerful generations of V2X and transportation safety applications.

V.   RETAINING SUFFICIENT SPECTRUM

As progress in V2X and transportation safety technology has accelerated, regulators and

industry experts have studied and documented the bandwidth requirements necessary to put this

new era of transportation safety to work.[7] On that front, the message is quite clear—the entire

existing spectrum allocated to V2X must be preserved. The documented harms from reducing

the dedicated spectrum range from interference with safety messages[8] to insufficient bandwidth

for all necessary safety messages in high risk areas.[9] In other words, the Commission's original

strategy for the spectrum has been validated on all relevant fronts: the need to act to advance

pedestrian and traffic safety is increasingly urgent; technological solutions are now realistically

deployable to address this need; the use of wireless communications remains a key component of

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[6] https://www.nhtsa.gov/press-releases/nhtsa-announces-update-historic-aeb-commitment-20-automakers

[7] *See, for example, Comments of the Alliance for Automotive Innovation*, at 8-10.

[8] *See,* U.S. Department of Transportation Spectrum Team Preliminary Report, *Preliminary Testing: Out-of-Channel Interference (Out-of-Band Emissions)* (December 6, 2019) at 4.

[9] See, Car 2 Car Communication Consortium*, Position Paper on Road Safety and Road Efficiency Spectrum Needs in the 5.9 GHz for C-ITS and Cooperative Automated Driving* (February 28, 2020) at 6.

these solutions; and the entire existing allocated bandwidth is necessary to prevent denying the public the benefits of these solutions.

VI.   FITTING THE FACTORS INTO REGULATORY ACTION

Regulatory and policy leadership are important because they set the direction of infrastructure. Wireless communications are a critical component of the solutions that will improve traffic safety and save lives. Systems that give "sight" to hidden driving hazards and vulnerable road users rely on this critical component. This places the Commission as a unique cornerstone that will support and shape the fight to improve pedestrian and traffic safety. Other tools are in place: affordable sensors, affordable AI computers, and the knowhow to use them. But to put these tools to work, it is important to maintain the availability of the _entire_ 75 MHz of the 5.9 GHz band for V2X and transportation safety applications. Equally, the policy leadership to embrace this nation's capabilities in transportation safety are essential to complete the factors for success in reducing pedestrian deaths. Arguments in support of the Commission's proposed action (a) wrongly advance short term growth in Wi-Fi over pedestrian and traffic safety, (b) build an incomplete record that does not recognize this nations growth in transportation technology, and (c) relegate our potential to advance safety to a follower position of other nations. The result ignores the growth and full breadth of V2X and transportation safety technology, wastes the opportunities that many V2X and transportation safety applications provide to advance safety and the Commission's core mission, and blunts this nation's ability to lead in pedestrian and traffic transportation safety.

There can be no greater success for the Commission than preserving the currently allotted 5.9 GHz band for V2X and transportation safety and actively promoting these uses. This nation is in a transportation technology growth era that includes V2X and transportation safety

applications. The state of pedestrian traffic safety is calling for a solution that is now at hand.

The Commission embarked on a well-planned long-term strategy when it allocated the spectrum.

Today's developments and growth in transportation safety technology put the Commission in

position to succeed with this strategy. This is not the time to carry out the current proposal.

Instead it is time for the Commission to assess the full breadth of today's technology that can

make use of the spectrum at issue to promote safety of life and property in transportation. We

believe that doing so will lead to one conclusion: now, more than ever, the entire 75 MHz mid-

band spectrum of the 5.9 GHz band should be preserved for V2X and transportation safety uses.

Respectfully submitted,

_____/MPS/_____	_____/ALS/_____	_____/JB/_____
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